STRATEGIC AIRLINE ALLIANCES: ADVANTAGES FOR MAJOR AIRLINES BEING ALIGNED

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Abstract

Some factors including the deregulation in the U.S and the liberalization in Europe of the airline industry are essential to understanding why the number of partnership agreements between airlines has increased during the last 25 years. These events, coupled with the continuous economic downturn and the 9/*11* catastrophe seem to be the perfect framework for the tendency to develop airline strategic alliances. However, it has been observed that this trend was not followed during the period 2005-2008. The purpose of this paper is to analyze if a benefit was experienced by the major airlines who became a member of the current 3 big alliances compared to the major airlines that decided not to become a member or were not admitted into the alliances during 2005-2008. The methodology of this report includes an analysis of several airlines' performance figures. These performance figures include the revenue passenger kilometers (RPKs), the passenger load factor (PLF) and also the market share (MS). The figures will be compared between the aligned airlines and others which have similar business models. The value of this paper is to reveal whether being aligned provides advantages to major airlines under a bearish airline market in a globalized environment.

Keywords: Partnership, Airline Strategy, Airline Performance

Introduction

Due to the deregulation and liberalization in commercial aviation in the United States and in Europe, unfettered free competition ushered in a new era in passenger air travel. And one of the results of this deregulation was that prices have declined steadily. Under this framework, some firms decided to enter into an international market to profit from the benefits of large scope and network spread. Academics and professionals of the industry alike agreed that a firm's mode of entry into an international market is a significant decision with broad and long-lasting implications for the firm. Complicating the situation is the fact that entering a new foreign market, or even expansion in a existing one, poses a whole host of political, financial, and market risks with which firms must contend (Root, F.R.,1994).

After this deregulation and liberalization, average firm size and aggregate industry concentration have increased considerably. Many airlines failed and were taken over by others. Small airlines merged with larger airlines, and the larger ones consolidated to form mega carriers **(**Chang, Yu-Chun and Hsu, Chia-Jui, 2005**).** Under this legal environment, policy-makers appear to believe that in a deregulated environment, larger size may have advantages in productive efficiency (Oum and Zhang, 1997).

According to Deutsches Zentrum für Luft- and Raumfahrt e.V, once the deregulation and liberalization happened in two of the three large airline markets, it enabled those local airline companies to follow the best criteria to make them as economically efficient as possible. Thus, there would no longer be anymore obstacles for mergers and acquisitions inside those two big markets. However mergers and acquisitions are still difficult for all large airlines having a big network outside the European Union and the U.S., because these routes are still partly under the bilateral regime with the old European ownership regulation.

Besides mergers and acquisitions, after the deregulation, another kind of strategic partnering was receiving more and more support by some professional and scholars during the 1990s: the international alliances between airlines. In fact, many of the speakers at the Phoenix Symposium in May 1999 argued that alliances were better than mergers or takeovers, because of the difficulties of integration, illustrated by past history; on an international scale those difficulties would be exacerbated by cultural differences (Chang, Yu-Chun and Hsu, Chia-Jui, 2005). In this context, Doganis, R.(2006) affirmed that the most active period of alliance-making was triggered by the deteriorating financial performance of international airlines and many airline managers saw alliance building as a key pillar of their survival strategy.

With all the information provided above, we can conclude that the environment enabled airlines to create many kinds of partnerships, and that the trend of creating global alliances has been an efficient strategy for major airlines during past 10 years. However due to the economic downturn and the process involved with partnering into airline alliances, only three –Star Alliance (SA), SkyTeam (ST) and Oneworld (OW) -

of the seven global airline alliances continue to remain active. Meanwhile, because of the apparently obvious benefits of being members of the alliance groups, more and more members were expected to join. Hence continuing this trend, during the period of 2000-2004, 17 more airlines joined those three alliances. By 2004, the three largest alliances accounted for roughly 49 percent of the global passenger market and about 58 percent of global revenue **(**Cools and Roos, 2005**).** Even in 2004, Wang *et al.* supported the idea that alliances between airlines significantly increase the traffic volume and market share for the airlines within the alliance. However during the period 2005-2008 only 12 new members joined the existing alliance groups. It would be expected that during this period of deregulation and liberalization, the economic situation and other factors such as globalization and oil price may have prompted the joining of substantial numbers of airlines to the alliances. It is likely that some of the medium and small size executives' carriers were worried that by entering into an alliance with a large carrier or group of carriers they would lose effective control over their own destiny in matters such as route development, pricing, branding, customer service standards and so on (Doganis, 2006).

Besides, during the period of 2009-2010, 9 airlines joined the three alliances. But it must be noted that a large number of airlines-11- are planned to join these alliances in the coming years-2011 and 2012. Some of these late joins are because of invitations from the alliances to smaller airlines that are not specialized in the longer sector while are in shorter routes, as the purpose of the alliances´ is to cover all destinations. All the joins during the period of 1997-2010 and some other important facts can be seen in Figure 1.

The small number of joins during the period of 2005-2008, was the decisive factor in deciding to undertake this topic as a research project.

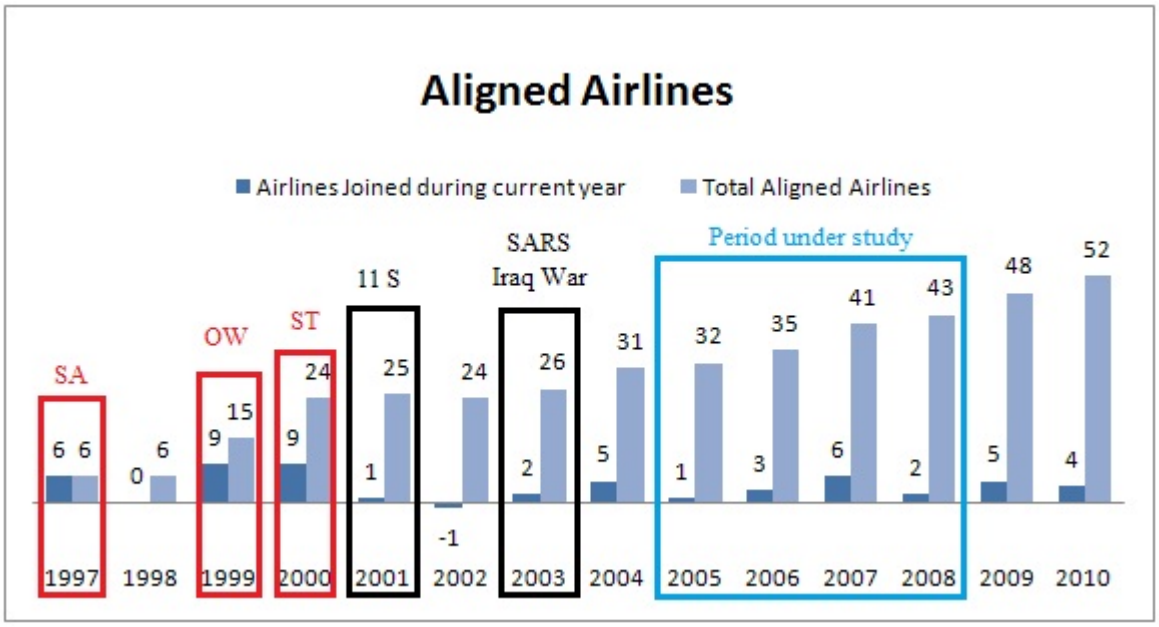

Figure 1 Number of airlines joining the three big alliances during the period of 1997-2010.

Theoretical Framework and Objective

Experience of deregulation in the United States and elsewhere, has demonstrated the critical importance of large airline size and the economies of scale that go with it. Conscious that deregulation led to increased concentration in the US domestic industry, airlines expect that liberalization on international routes will have much the same effect; and so, to achieve the benefits from large size, airlines have been teaming up with each other, forming various kinds of alliances (Burton and Hanlon, 1994).

Airline growth and competitive strategies not only include cost cutting measures and better revenue management tools, but also strategic alliances with other airlines. In many cases the airlines have entered into code sharing agreements to maintain or expand network coverage, and international code sharing has now become part of bilateral negotiations. Airlines use alliances as a means to achieving global service networks, getting access and establishing identities in new markets without providing aircrafts, and providing services which would be unprofitable if operating alone (Rajasekar and Fouts, 2009).

If we want to mention the already created global airline alliances –disbanded or still active-, we could speak about seven, even when three of them-Wings Alliance, Atlantic Excellence and Global Excellence Alliance- were not strictly a global alliance as we know them now. The list of these seven alliances by order of formation is:

- Global Excellence Alliance (1989)
- Wings (1989)
- Qualiflyer (1992)
- Atlantic excellence (1997)
- Star Alliance (1997)
- Oneworld (1999)
- SkyTeam (2000)

In the late 1990s, the situation of the global alliances became complex due to the multiple agreements held by some alliance members with members of other alliances. Scholars and professional noted at that time, that this situation corresponds to a transitory situation where the number of alliances shrinks and the remaining alliances capitalize the market. Evidence shows this hypothesis to have been proven correct as four of those alliances dissolved, leaving only three alliances still active. Furthermore, the remaining alliances increased their size by the joining of former members of dissolved alliances.

The purpose of this research paper is to analyze the period (2005-2008) to be able to conclude which of the two groups, those aligned to the three big alliances or those with no alliance, achieved better performance. For this, it has been paramount to study the increase of Revenue Passenger Kilometer (RPKs) and Passenger Load Factor (PLF), as these two variables are used to measure the productivity and profitability of airlines.

Research Design and Methodology

The data for this research study has been collected primarily from four sources. The first are the official websites of the three airline alliances: Star Alliance, SkyTeam and Oneworld. These websites allowed us to know the joining date of the members and also the number of airlines that joined each year to each alliance since their formation date.

The second source comes from the alliances members´ official websites. These websites let us know about the patterns carried out by each airline and the evolution of these patterns. With this information we could understand the strategic group to which each of these airlines chose to belong. As a result, more than 120 official websites have been consulted.

The third source of data comes from Wikipedia, which was a great tool for reviewing the history of the alliances and as a confirmation of which strategic group each airline belonged to.

The fourth and most meaningful source was the data collected from the databases of International Air Transport Association (IATA), the World Air Transport Statistics publications (WATS). The data for six years, from 2004 to 2009, was collected. From there we obtained the RPKs and ASKs of all airlines involved in our research paper. These two variables are a key dataset in our research.

The airline industry can be analyzed using different sets of data related to safety, labor, freight, traffic or cost. But since we are focused on passenger airlines, the starting point was traffic dataset. While there are several standards to measure the traffic of airlines, the RPKs is the preferred one by air transport organizations and airlines due to be the parameter that most closely corresponds to airlines' revenue (Rajasekar and Fouts, 2009). Thus we used the RPK as the main variable in our research method.

As the purpose of this research paper was to analyze the period of years between 2005-2008 and be able to conclude which of the two groups, those airlines aligned to the big three alliances or the non-aligned airlines, achieved better performance; the next step was to determine the airlines that make up both groups during each of the years.

We focused first on the aligned group. For this we listed all airlines that joined the alliances previously, even when they had already left. Also some details such as joining date, year of formation and main hubs of those airlines were collected too. The data was recorded until December 2010. With this information we knew which airlines were members of the alliances during the four year period under study.

Once we studied the group members, the next step was to determine the RPKs- expressed in millions in all of the research papers cited- of these airlines. So, we chose the RPK provided by the WATS-World Air Transport Statistics- 53th edition that contains data for the year 2008.

Analyzing the size of the aligned members, we observed that the aligned airlines are mainly a big group of the top 50 larger airline companies of the world. Less than 8% of them-with the data of 2008- had RPKs lower than 3.000 million. Thus, we chose this

number of RPKs as a first benchmark and made a list with the non-aligned members that by the year 2008 had higher RPKs than 3.000 million.

After obtaining the first benchmark, all airlines included on the non-aligned group were examined. It is important to note:

- Some airlines were excluded as they did not continue the process of being a possible member of the definitive non-aligned group. These are:
    - Aer Lingus: for turning into a low cost carrier during the period under study.
    - Flybe: for being a low cost carrier.
    - Jelite: for being marketed between a low cost and a full service airline; and for the difficulty in incurred from following this evolution since it was bought by another airline-without merge- and made up with that one later during the period of study.
    - Pegasus airlines: for being a low cost carrier.
    - Hapag-Lloyd: for being focused on charter services.
- Some airlines were not excluded but should be noted to explain their particularities:
    - Air Berlin: even is a semi low cost carrier it was included in the group of non-aligned airlines because it was invited to join one of the alliances –Oneworld-.
    - Air One: included also because even currently operates as a low cost carrier, this happened after the period under study.

Some airlines also need to be quoted for different reasons:

- Alitalia: which took over the name, landing rights, many planes and some other assets from the liquidation process of the old Alitalia — Linee Aeree Italiane and the entire Air One. It will be included in the list of aligned airlines during all periods of study.
- Varig: went into judicial reorganization (similar to the American concept of bankruptcy protection) and in 2006 it was split into two companies informally known as "old" Varig - heir to the original airline, and "new" Varig - a new company presently fully integrated into Gol Airlines. It will be included as aligned only in 2005 and 2006 since in 2007 it exited IATA.
- Air Transat: will not be included since only data from 2008 is available.
- Vietnam Airlines: was admitted into IATA in 2006, so there is no data available for the year 2005.This is because on the WATS 50th edition-year 2005- IATA did not record the data of Non IATA members. Hence, it will not be included in the analysis.

For studying the distribution of RPKs of both groups, a histogram that clarifies the sizes of the airlines of both groups was done. On it we can see how many airlines of each group are contained in each of the RPK´s intervals. Figure 2 shows the RPKs´ distribution of the aligned and non-aligned groups.

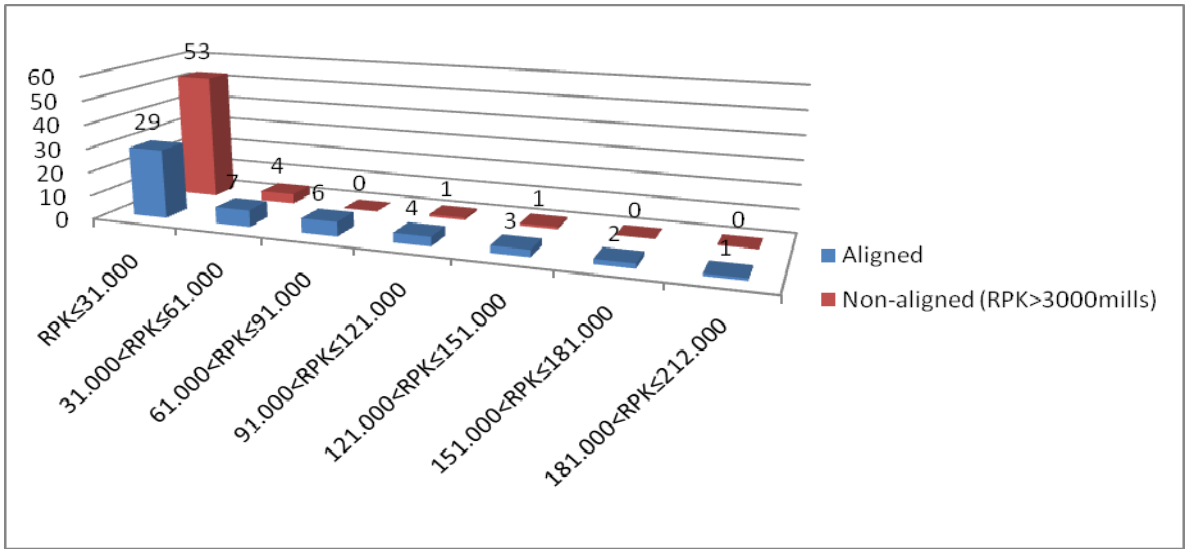

Figure 2 Histogram 1: RPKs´ distribution of the aligned and the non-aligned groups.

Since the preselected group of non-aligned members is a bit more numerous than the aligned one-59 members against 52-, if we observe the first column (airlines with RPKs<31.000 million) we will see that nearly 90% of the non-aligned airlines have a RPKs <31.000 million, while also many aligned airlines are situated on this first interval. Hence, a second histogram was required to more deeply study the airlines with smaller RPKs.

Doing a second histogram with the top limit of 31.000mills, and dividing it into 5 different subgroups, we obtained Figure 3.

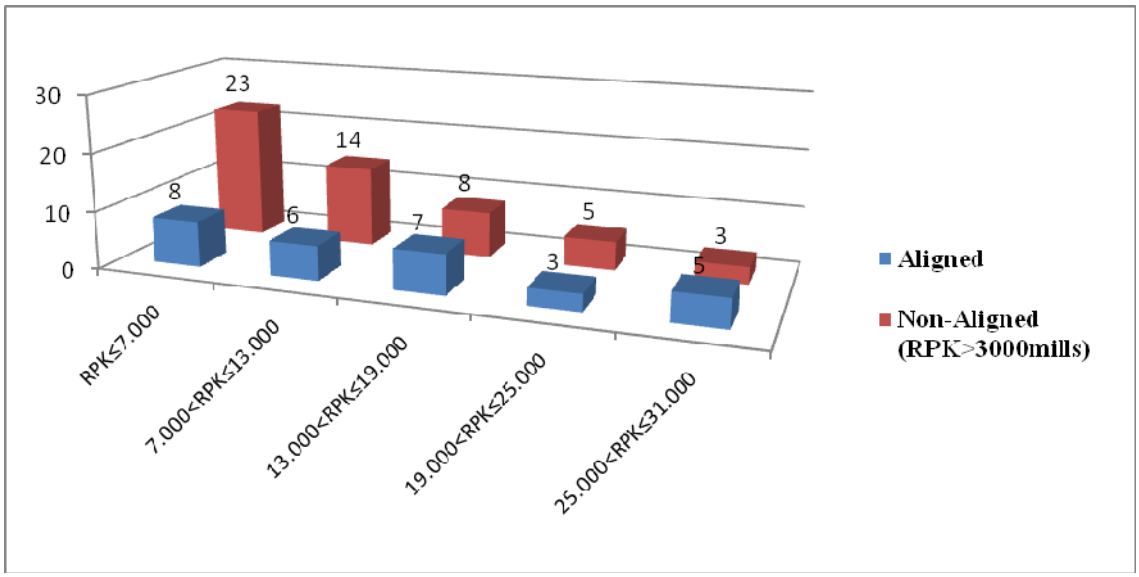

Figure 3 Histogram 2: RPKs´ distribution of the aligned and the non-aligned groups.

In Figure 3 we can see that the aligned group is quite homogeneous distributed between the five subintervals, but the non-aligned group is mostly distributed in the small RPK subintervals. It means that even in these 5 subintervals, the airlines of the aligned group are larger in size than the non-aligned ones. Considering these two facts,

the previous and the explained in the next paragraph, the second and definitive benchmark for choosing the final non-aligned airlines group was decided.

Since we are trying to make a group with the airlines that are not alliance members but have the most similar airline patterns-belonging to the same strategic group- as possible to the aligned airlines, we decided to exclude the airlines with smaller size from the first non-aligned group. It seems reasonable to use the 25th percentile-selecting only the airlines situated on the other 75%- to be sure that the non-aligned airlines are similar enough to the aligned ones. It should be seen that because the size of the aligned airlines are generally much bigger than the group of non-aligned airlines after using the first benchmark, the use of a second percentile that would limit the RPKs on the other side of the median respect to the 25th percentile is not needed.

The 25th percentile determined that based on the aligned members´ RPKs, the benchmark should be 9.000millions –approximately, since there are 9 aligned airlines with less than 9.000millions based on WATS 53th edition, which corresponds with a 23%-.

A way to check if the second benchmark-9.000mills- is appropriate was to see the trend of the size of the future members of the alliances. Taking the next two years-2011 and 2012- future members' RPKs-from WATS 54th edition- and doing a third histogram to see their RPKs distribution; we can determine that 9.000mills still corresponds to a 25th percentile since only 3 of the 13 possible new members have RPKs< 9.000mills. This histogram is displayed in Figure 4.

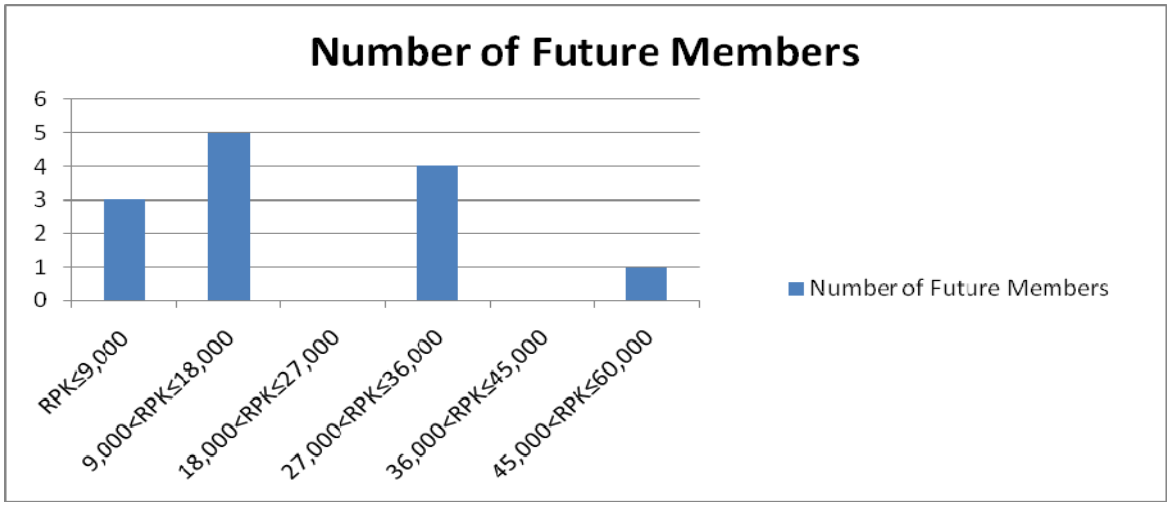

Figure 4 Histogram 3: RPKs´ distribution of the future-2011 and 2012- aligned airlines

Hence, with this second and definitive benchmark, we could reselect a more specific group of non-aligned airlines, where only airlines with RPKs higher than 9.000millions were included. We then determined the definitive non-aligned airlines' group to be compared with the aligned group.

For a better understanding of the research design and methodology a simplified model was made. This model, which is a summary of the process followed for defining the members of the aligned and non-aligned groups can be seen the Figure 5.

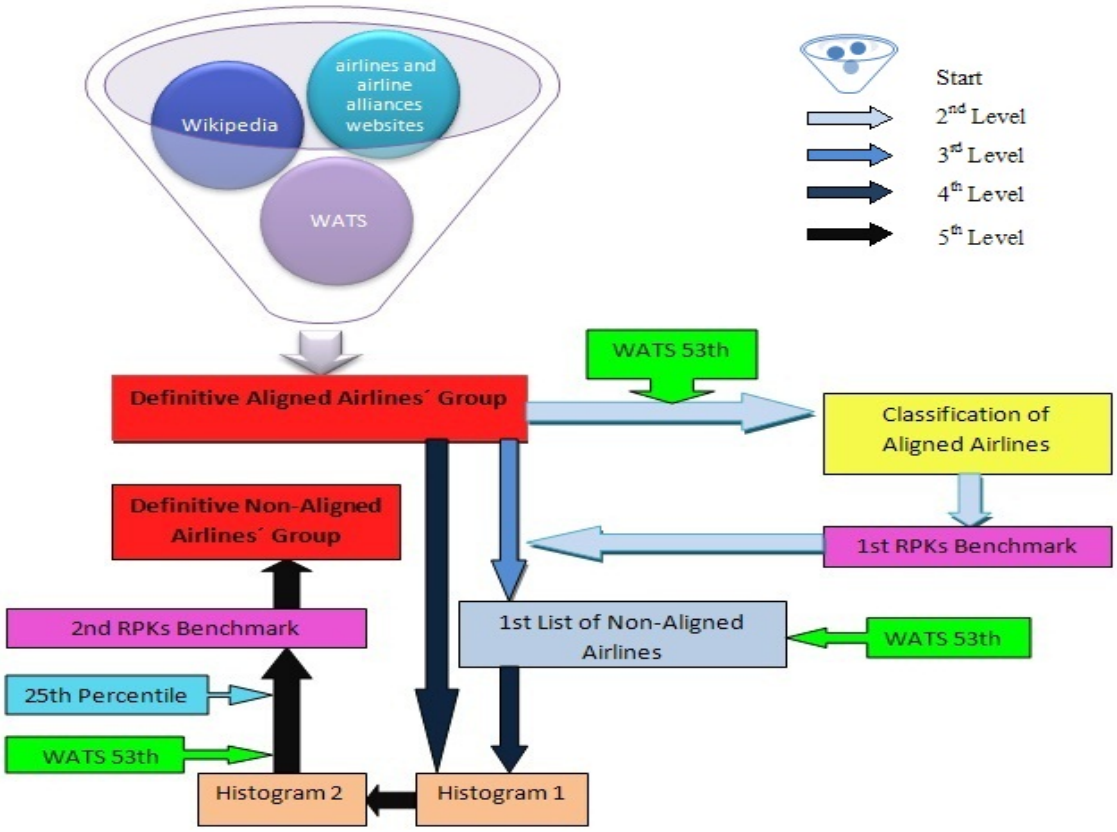

Figure 5 Simplified Research Design and Methodology Model

There is some information which was not provided previously which might clarify some details of our research:

- The first is that all airlines contained in our research are IATA members. All the members of the airlines alliances are associated to IATA and thus, we decided that all possible candidates to be in the group of the non-aligned airlines should be members of IATA too.
- All RPKs data from the WATS publications came from Scheduled Services, and only from them. It means that the RPKs that come from the Charter Services were not taken into account.
- It is true than many aligned airlines offer charter services but none of them is wholly focused on that business, just partially. This is because charter operators expand the market to the price sensitive tourist prepared to accept much lower service levels in returns for cheaper travel than scheduled alternatives (Driver, 2001). Therefore their airline pattern would not be similar to the other aligned members. Hence Charter airlines were not included in the analysis and results chapter.
- Low Cost Carriers were rejected to take part in our research project analysis since their airline pattern is totally different to the aligned airlines.
- The affiliate's airlines of the full alliance members were not included in the analysis chapter.

- If one airline joins an alliance during a year, it will be considered as aligned from that year inclusively.
- If one airline exits one alliance during a year, it will be considered as non-aligned from that year inclusively as long as its business models do not become low-cost.
- The final non-aligned group is formed by:
    - All airlines which were aligned before 2005 and did not turn into a charter or low cost carrier.
    - All airlines that joined any of the alliances during 2009 or 2010.
    - The non-aligned IATA members which without being a charter or low cost carrier on 2008 they had a RPKs higher than 9.000mills.

Results and Analysis

A well-known fact is the link that has been established historically between the demand for air travel and world economic growth. The link between the economy and the demand for air travel can be found everywhere to a greater or lesser degree. However this link makes it impossible to compare the enhancement of a group of airlines against another group with different geographical locations, since the obtained data would be quite dependent of the local economy. Thus, the way of making a comparison was to do it globally over a determined period, which means to compare over a determined period of time different groups of airlines while every group has its members´ main hubs location distributed worldwide.

The first result that we obtained was the market share (MS). We show the results in four tables, each one with the airlines that make up each of the two groups, for each of the four years under study. Those tables contain the RPK and ASK of every airline included on them. Then we calculated the Total RPKs and ASKs -as addition of the RPK and ASK of the airlines of each group- for each of the years and for both groups, obtaining at the same time the RPKs and ASKs of the IATA airlines which are not included in both groups. Using this information we did two graphics to study the evolution of each of the three groups compared to the other ones. The first one corresponds to the RPK and the second one to the ASK. These figures are included in Figure 6. From the analysis of Figure 6 we have four facts:

- Less than 100 airlines –the airlines of the aligned and non-aligned group- of a total of 248 have more than 90% of the world´s market share.
- The market share of the aligned airline group during the period under study increased.

- The market share of the Aligned Airlines´ group is more than double by 2005 and triple by 2008 compared with the non-aligned group.
- By the end of 2008, the aligned airlines (43 airlines) had 72% of the world's Market Share.

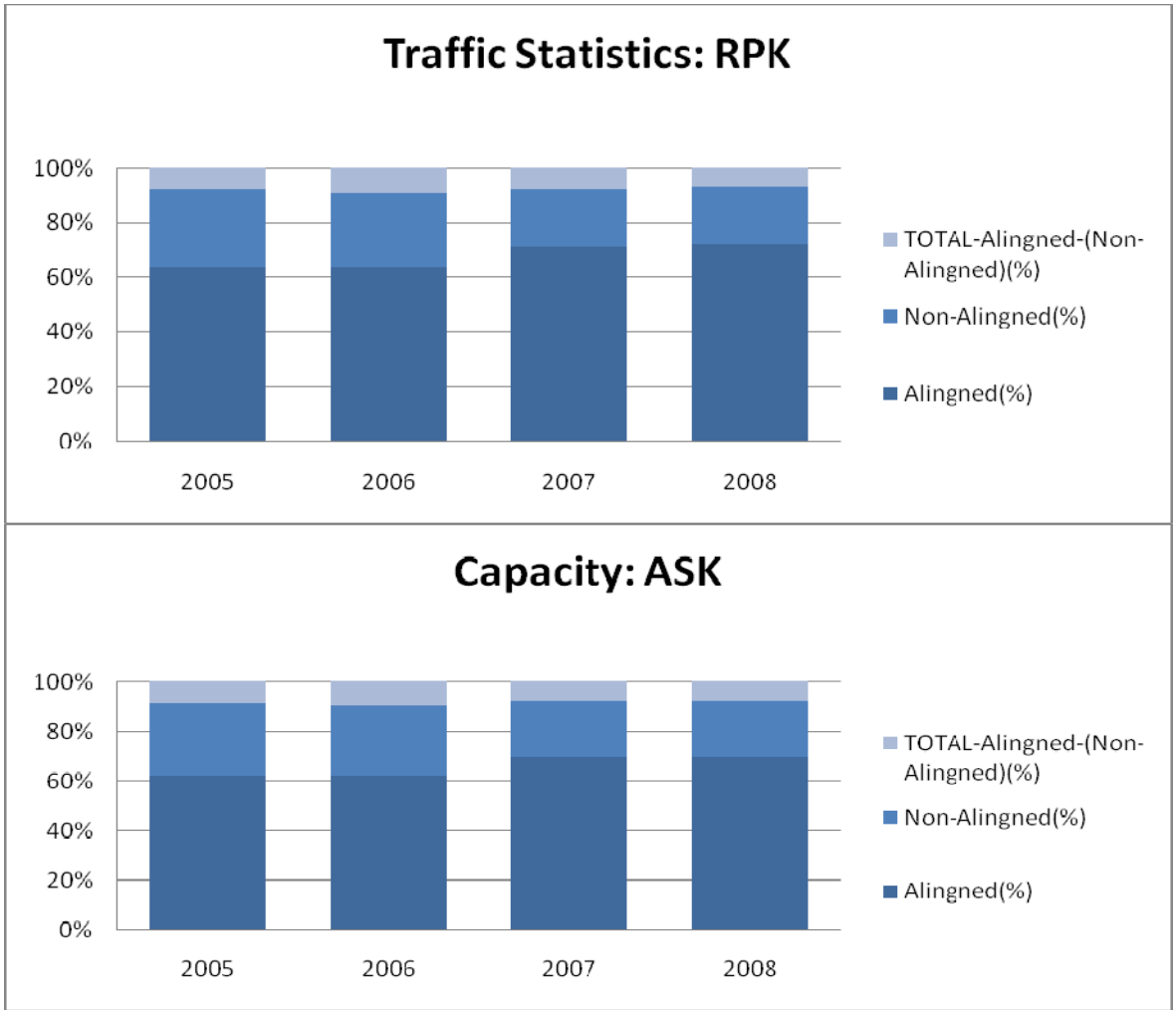

Figure 6 Airline Industry´s Market Share by Traffic Statistics and Capacity.

The second results comes from analyzing the increase of RPK, ASK and PLF. The same four tables used for calculating the MS were required again. From those tables, we compared the aligned airlines included in two consecutive years. For example: we compared the aligned airlines included in the table of the year 2005 with the ones included in the table of the year 2006, and we select only the airlines included in both tables. Then, with those airlines we made a new table and with the RPK, ASK and PLF of the airlines of both consecutive years we calculated the increase. Repeating this process with the tables for the years 2006 and 2007, and similarly with the tables for the years 2007 and 2008, and then repeating the whole process done for the aligned airlines but doing it with the non-aligned airlines we obtained all the necessary increases to calculate the performance of both groups.

For calculating these increases, we used these equations:

$$\Delta RPK = \left(\left(\frac{2nd\ year\ RPK}{1st\ year\ RPK}\right) - 1\right) \times 100$$

$$\Delta ASK = \left(\left(\frac{2nd\ year\ ASK}{1st\ year\ ASK}\right) - 1\right) \times 100$$

$$\Delta PLF = \left(\left(\frac{2nd\ year\ PLF}{1st\ year\ PLF}\right) - 1\right) \times 100$$

Once we determined the increases, we calculated the average increase for each of the variables for each of the two year periods and for each of the groups. We then added the average increase of each parameter of all two year periods for each of the groups. Thus we obtained the required data to form Figure 7.

Considering the data obtained from the RPK (measure of productivity), the ASK (carrying capacity) and the PLF datasets; we can conclude that based on Figure 7 the non-aligned airlines achieved better improvement in all the examined variables than the aligned airlines during the period under study. This conclusion might make scholars and professionals who supported the idea that staying aligned for a major airline under some macroeconomic environment such as: globalization, a liberalized industry and a bearish airline market is the best choice. Probably some of the non-aligned airlines' executives forecasted this fact during the period 2004-2007 and that is why they took the decision of continuing being non-aligned during the period under study (2005-2008).

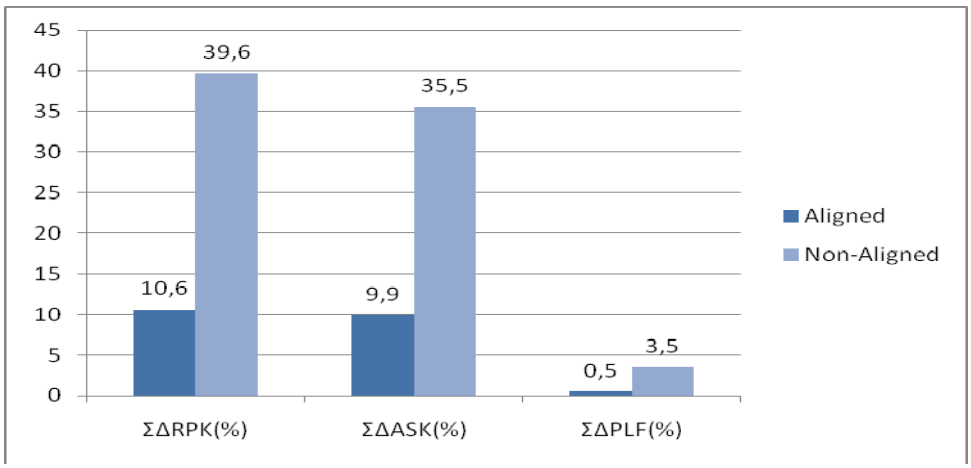

Figure 7 ΣΔRPK (%), ΣΔASK (%) and ΣΔPLF (%) of the aligned and non-aligned groups (2005-2008).

However, upon making a deeper analysis of the situation while focusing our attention on the PLF dataset we find that the aligned airlines seem to have a stable and high average PLF, between 74% and 75%, but the non-aligned airlines began the period with a lower average PLF, thus having the chance to make larger gains with this variable than the aligned airlines. This data was obtained from the four tables calculated before and can be seen in Table 1.

Table 1 Average PLF of the aligned and non-aligned groups from 2005 to 2008

Avg. PLF				
	2005	**2006**	**2007**	**2008**
Aligned	74.0%	74.8%	75.0%	73.9%
Non-Aligned	71.9%	72.0%	74.3%	73.9%

If we repeat the same process that was explained at the beginning of this section, but we divide the aligned groups into three (i.e. each group would include the airlines of each alliance), we could obtain the addition of the increases of RPK, ASK and PLF of each of the alliances for the period of 2005-2008. With this data we got the figure 8. On it we can see that the increases of Oneworld are much bigger than those achieved for Star Alliance and SkyTeam. Hence, it seems that even some professionals supported the idea that Star Alliance is the alliance that during our study period was one step forward, however our results do not support this idea. It is likely that Star Alliance could be a more established alliance financially speaking, already focused on cost reduction, but during the period under study Oneworld achieved better improvement on traffic and capacity utilization.

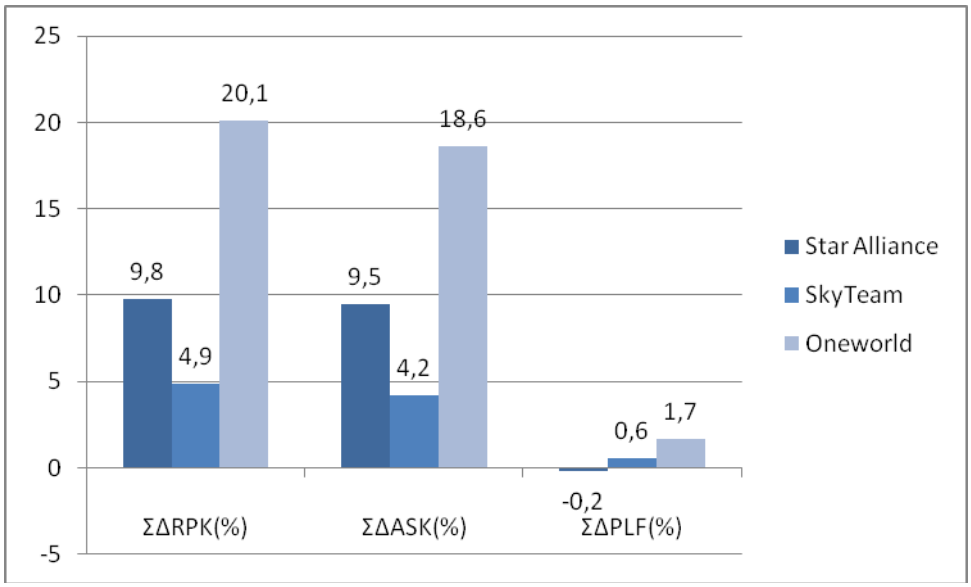

Figure 8 ΣΔRPK (%), ΣΔASK (%) and ΣΔPLF (%) of Star Alliance, SkyTeam, Oneworld (2005-2008)

Seeking for a possible explanation to the question: why Oneworld was the alliance that got better improvement, followed by Star Alliance and by SkyTeam?; we found that:

- Even the number of main hubs of Oneworld is smaller than the other alliances, they are more uniformly distributed within the areas with higher air traffic demand. Thus, the airlines of the alliance might be operating more as

complementary than as parallel, supplying passengers between them instead of competing for the passengers and then making the network more efficient.

- Some of the benefits of large scope and network spread could be the key issue:
  - Star alliance is the only alliance that has network coverage on the west coast of the U.S., while only Oneworld can supply South America. Furthermore only these two alliances cover the middle-east area. This could explain why SkyTeam's RPK performance was not as good as that obtained by the other alliances.
  - Even when Star Alliance and SkyTeam have more main hubs distributed worldwide: The average traffic managed by the hubs of Oneworld is higher than that managed by the hubs of the other alliances. Hence, it means that Oneworld could be dominating the market of the hubs where it operates and also could offer greater higher-frequency services than the other alliances on spokes radiating from hubs that have high traffic connecting through other hubs.

Conclusion and Further Directions

For achieving the aim proposed in our abstract, it was necessary to review the following: the history of the regulations of the airline industry, the history of the different kinds of partnering, code-sharing and agreements developed in the airline industry, the profile of the different global strategic alliances that have been formed until now, the business model and airline pattern of most IATA members one by one and the macroeconomic environment of the past fifteen years.

This information let us develop a method for processing the variables provided in the publications of IATA (WATS): RPK, ASK and PLF. This method did not require the use of complex formulas or algorithms; however having an acceptable knowledge of the airline industry for obtaining reliable results was needed.

After reading some publications about our research topic, the expected results were that: aligned airlines, especially Star Alliance, achieve invariable improvement of the macroeconomic environment (based on our variables) than the non-aligned airlines and the other two big alliances respectively. However our research paper does not confirm this hypothesis. Our research paper found that during the period 2005-2008 the group of non-aligned members got higher increases in the RPK, ASK and PLF than the aligned group. Furthermore, the alliance that seems to be most successful is Oneworld, far from the results achieved by Star Alliance and SkyTeam.

Collecting the data for this research paper was the most complex of the procedures. There is not much public data available about the airlines but only that provided by a few airline companies´ official websites. Besides, some of the data that has been found was not reliable. The existence of so many airlines and the dynamism of the airline industry make it necessary to find a more abundant and detailed data if more accurate results are desired. Once new data has been collected, this research paper

would be able to attain results with larger scope. For example, it could be interesting to study the financial results such as: operating revenues, operating expenses, operating results and net results other than those of the RPK, ASK or PLF and do a parallel comparison, to see if we would still obtain the same conclusion as that found in this research paper.

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